

Operation & Maintenance Manual

for

 **SURVIVAL**

CJ20628

Presented by:

ELECTROSONIC

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Project Team

Project Delivery Team

Exhibit Designer	Enigma
Media Production	ICO
	Lucky Bite
	Spiral Productions
Setworks	Huttinger
	Scena Pro (Dining Table)

Electrosonic Team

Sales Manager	Alan Wilkinson
Systems Consultant	Simon George
Project Manager	Simon Toleman
Project Engineers	Gavin Aldridge
Installation Manager	Vernon Bassett

System Description

Show Control System

Each rack has an independent show control system that is controlled from a Siemens Logo! PLC controller. This handles the button pushes and incorporates a time clock.

The System can either be turned on / off by the buttons in the top of the rack or from the Global on/off buttons in Rack 18 (Conclusion), this is providing the structured cables have been installed to link the racks together.

Equipment Racks

The equipment racks have been custom built by Electrosonic in house and have been built with a common feel.

The key similarities are:

1. Common show control shelf that incorporated a network switch, Siemens Controller, Mini SCU controller if RS232 is needed for a projector control and the system on and off buttons.
2. Generic Power mains boxes that have been custom designed to “The Science of...” needs and incorporate diagnostic neons and mains contactors to assist with the show control.
3. Custom engraved AV connection panels that have been clearly engraved with a descriptive name and Cable number.

Technical Solution

Audio Visual Hardware Overview

All of the equipment is installed locally to the exhibits they are associated with, rather than using a central equipment rack approach. There will need however to be communication between exhibits for the purposes of collating RFID tracking information. The approach taken is to include the control local to each exhibit with an approach of having a common 19 inch flight case rack per exhibit with a common human and physical interface. This increases the robustness of the computers during transportation, simplifies and speeds up installation (little more than take off the front cover of the flight case) and reduces the flight cases that need to be stored on site away from the exhibition.

The specification for the PC for the following exhibits Vehicle Racing Game, Living Surface the Intro and Conclusion zones is as follows: -

- 1 x INTEL Core 2 Quad-Core Q6600 G0 SLACR, 95W, S775, 2.40 GHz, 1066MHz FSB, 8MB Cache, = 9.6GHz Processor
- 1 x GIGABYTE GA-P35-S3G, iP35 Express, S 775, PCI-E (x16), DDR2 1066/667/800 MHz, SATA II, ATX Motherboard
- 2 x CORSAIR 1GB TwinX XMS2, DDR2 PC2-6400 (800), 240 Pins, Non-ECC Unbuffered, CAS 4-4-4-12, DHX Memory = 2GB
- 1 x SEAGATE 320GB Barracuda 7200.10, SATA300, 7200 rpm, 16MB Cache, 8.5 ms, NCQ HDD
- 1 x LITEON 20A4P-21C 20x DVD±R, 8x DVD±DL, DVD+RW x8/-RW x6, DVD-RAM x12, IDE Black DVD Burner
- 1 x GAINWARD 768MB 8800GTX, Bliss, PCI-E (x16), Mem 1800 MHz, GDDR3, GPU 575 MHz, 2 x Dual Link DVI-IGraphics

The remaining PC's in the exhibition all have the following specification: -

- OptiPlex 755 DT Core 2 Duo E6750 (2.66Ghz/1333MHz/4MB)
- PCI/PCI Riser (2 PCI + 1 Graphics)
- OptiPlex 755 Vista/XP Resource DVD
- 2.0GB 667MHz NON-ECC DDRII Memory (4*512MB)
- No Floppy Drive
- 160GB (7200 rpm) SATA Hard Drive
- 16X DVD +/-RW (Vista & XP)
- Chassis Intrusion Switch
- ATI Radeon HD 2400 XT 256MB DUAL VGA (FH)
- English - Genuine Windows XP Professional SP2 Media

1.2 Tracking System

The following hardware is provided for the RFID tracking system.

Equipment

24 RFID Scanners (there are four spare units)

2.2 AV Intro

A single projector is provided with a native resolution of 1400 x 1050 and rated at 4200 ANSI lumens brightness. The projector front projects on a matt white wall of approximate dimensions 3 m x 2.25 m in a 4:3 format. The source is from a PC.

Also stored on the PC is the audio. This consists of five channels and a sub bass. The audio signals are processed by a digital audio processor. It is possible locally via the amplifiers to change the volume level of any of the individual speakers. There is a radio microphone and mixer added so that announcements can be made from the radio microphone. The players, amplifiers and audio processor are installed in a local flight case 19" equipment rack located in the store behind the projection screen.

Equipment

- 1 Projector Mounting Bracket
- 1 Projection Design F1 Projector
- 1 Projection Design F1 Wide Angle Lens (1.02-1)
- 1 PC with GeForce 8800 GTX Graphics card
- 1 Audio Card with Dolby 5:1 Output
- 1 Art Pro Microphone Mixer
- 1 Denon DN-7100 Surround Sound Decoder
- 5 JBL Control 23 Loudspeakers
- 1 JBL Control SB210 Sub bass
- 3 Carlsboro Powerline CP200 Amplifiers
- 1 Carlsboro Powerline 800 Amplifier
- 1 Electrosonic P300 MScu Controllers
- 1 Trantec S4.16 Microphone System
- 1 Flight Case 24U Equipment Rack
- 1 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 1 Power Distribution per rack
- 1 Power Contactor per rack
- 1 AV Connection Panel
- 1 8-Port Network Switch

Living Projection

A Projection Design F30 projector with an ultra short throw lens is mounted to project downwards on to the floor. Movements are tracked via a camera and the PC and camera are connected to a PC. Movements detected by the camera affect the output from the PC which is displayed by the projector. Audio is via a Carlsboro CP200 Amplifier and a pair of JBL Control 23 speakers.

Equipment

- 1 Projector Mounting Bracket
- 1 Projection Design F30 Projector
- 1 Camera
- 1 Projection Design F30 Wide Angle Lens (0.8-1)
- 1 PC with GeForce 8800GTX Graphics Card
- 1 Carlsboro Powerline 200 Amplifier
- 2 JBL Control 23 Loudspeakers

3.1 Find Water or Die

A projector rated at 6500 ANSI lumens front projects downwards on to a table top using a short throw lens. It displays images generated from a PC and the assumption has been made that the PC is within 10 metres of the projector. Twelve large illuminated buttons interface to a keyboard emulator that generates key presses via USB as input to the PC. The audio also stored on the PC is output via a pair of speakers and a sub bass.

Equipment

- 1 Projector Mounting Bracket
- 1 Projection Design F30 Projector
- 1 Projection Design F30 Wide Angle Lens (1.25-1)
- 1 PC with 4 serial inputs
- 1 IPac Keyboard Emulator
- 12 Illuminated Push
- 1 Carlsboro Powerline CP200 Amplifier
- 2 JBL Control 5 Speakers
- 1 Flight Case 16U Equipment Rack
- 1 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 1 Power Distribution per rack
- 1 Power Contactor per rack
- 1 AV Connection Panel

3.2 Global Exhibit: Water (Drinking)

A 20" LCD monitor displays a video file stored and replayed from a MPEG2 standard definition player. Audio also stored on the player is replayed via a pair of flush mounted speakers.

Equipment

- 1 Dell 2007FP" LCD Screen
- 1 Alcorn McBride DVM2 Video Player
- 1 Carlsboro Powerline CP200 Amplifier
- 2 Kef Ci80 Speakers
- 1 Flight Case 16U Equipment Rack
- 1 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 1 Power Distribution per rack
- 1 Power Contactor per rack
- 1 AV Connection Panel

4.2 Global Exhibit: Food (Eating)

A 20" LCD monitor displays a video file stored and replayed from a MPEG2 standard definition player. Audio also stored on the player is replayed via a pair of flush mounted speakers.

Equipment

- 1 Dell 2007FP" LCD Screen
- 1 Alcorn McBride DVM2 Video Player
- 1 Carlsboro Powerline CP200 Amplifier
- 2 Kef Ci80 Speakers
- 1 Flight Case 16U Equipment Rack
- 1 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 1 Power Distribution per rack
- 1 Power Contactor per rack
- 1 AV Connection Panel

4.3 Design Your Own Food

Four identical systems are provided. Each consists of a 30" touch with a separate PC. There is a powered speaker for each screen. Each PC also has a serial port for connection of the RFID tag reader. A local network switcher is provided.

Equipment

- 4 Dell 3007WFP 30" LCD
- 4 30" U-Touch Screen Overlays
- 4 Lindy USB extenders
- 4 PC with 2 serial inputs
- 4 Dell Sound Bar Speakers
- 1 Netgear Switch
- 1 Flight Case 16U Equipment Rack
- 1 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 1 Power Distribution per rack
- 1 Power Contactor per rack
- 1 AV Connection Panel

4.4 Dinner Table Global Game

A projector of native resolution 1400 x 1050 at 6500 ANSI lumens will front project downwards on to a table top using an ultra short throw lens. It will display images generated from a PC and the assumption has been made that the PC is within 10 metres of the projector. Twelve large illuminated buttons will interface to three mini show controllers that will generate a serial code that is input to the PC and provide feedback so that the appropriate button is lit. The audio also stored on the PC is output via a pair of speakers.

Equipment

- 1 Projector Mounting Bracket
- 1 Projection Design F30 Projector
- 1 Projection Design F30 Wide Angle Lens (0.8-1)
- 1 PC with 8 serial inputs
- 3 Electrosonic P300 Mini Show Controllers
- 12 Illuminated Push Buttons
- 1 Carlsboro Powerline 200 Amplifier
- 2 JBL Control 23 Loudspeakers
- 1 Flight Case 13U Equipment Rack
- 1 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 1 Power Distribution per rack
- 1 Power Contactor per rack
- 1 AV Connection Panel

5.1 Beyond Our Basis Needs AV

A 52" LCD screen displays images generated from a PC. In addition there is a pair of stereo speakers.

Equipment

- 1 Sharp PN-525P 52" LCD screen
- 1 Monitor Mounting Bracket
- 1 Carlsboro Powerline 200 Amplifier
- 2 Kef Ci160 23 Loudspeakers (square)
- 1 PC with 2 serial inputs
- 1 Flight Case 12U Equipment Rack
- 1 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 1 Power Distribution per rack
- 1 Power Contactor per rack
- 1 AV Connection Panel

6.1 Vehicle Racing Game

Four identical systems are provided. Each consists of a 20" LCD displaying images generated by a PC with a GeForce 8800 GTX graphics card installed. The steering wheel provided by the set builder interfaces by USB as a PC game controller. There is also a serial interface for the RFID tag reader. Each system will have a pair of stereo speakers.

Equipment

- 4 Dell 2007FP 20" LCD Screens
- 4 Monitor Mounting Brackets
- 4 PC with GEForce 88GTX Graphics Card and 4 Serial Ports
- 4 Lindy USB Extenders
- 4 Carlsboro Powerline 200 Amplifiers
- 8 JBL Control 23 Loudspeakers
- 1 Netgear Switch
- 2 Flight Case 16U Equipment Racks
- 2 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 2 Power Distribution per rack
- 2 Power Contactor per rack
- 2 AV Connection Panel

6.2 Global Exhibit: Moving

A 20" LCD monitor displays a video file stored and replayed from a MPEG2 standard definition player. Audio also stored on the player is replayed via a pair of flush mounted speakers.

Equipment

- 1 Dell 2007FP" LCD Screen
- 1 Alcorn McBride DVM2 Video Player
- 1 Carlsboro Powerline CP200 Amplifier
- 2 Kef Ci80 Speakers
- 1 Flight Case 16U Equipment Rack
- 1 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 1 Power Distribution per rack
- 1 Power Contactor per rack
- 1 AV Connection Panel

6.3 Design Your Own Vehicle

Four identical systems are provided. Each consists of a 30" LCD screen displaying images generated by a PC. A keyboard emulator interfaces three push buttons to the PC and will provide the PC with serial commands in relation to buttons pressed. There will also be a serial interface for the RFID tag reader. Each system will also have a single speaker.

Equipment

- 4 Dell 3007WFP 30" LCD Screens
- 4 Monitor Mounting Brackets
- 4 PC with 2 Serial Ports
- 4 IPac Keyboard Emulators
- 12 Illuminated Push Buttons
- 2 Carlsboro Powerline CP200 Amplifiers
- 4 Kef Ci160 Speakers
- 2 Netgear Switches
- 2 Flight Case 16U Equipment Racks
- 2 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 2 Power Distribution per rack
- 2 Power Contactor per rack
- 2 AV Connection Panel

7.2 Global Exhibit: Building

A 20" LCD monitor displays a video file stored and replayed from a MPEG2 standard definition player. Audio also stored on the player is replayed via a pair of flush mounted speakers.

Equipment

- 1 Dell 2007FP" LCD Screen
- 1 Alcorn McBride DVM2 Video Player
- 1 Carlsboro Powerline CP200 Amplifier
- 2 Kef Ci80 Speakers
- 1 Flight Case 16U Equipment Rack
- 1 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 1 Power Distribution per rack
- 1 Power Contactor per rack
- 1 AV Connection Panel

7.3 Design Your Own Home

Four identical systems are provided. Each will consist of a 40" LCD screen displaying images generated by a PC. . A keyboard emulator interfaces four push buttons to the PC and will provide the PC with serial commands in relation to buttons pressed. There will also be a serial interface for the RFID tag reader. An audio handset is provided with each system and in addition there is a single speaker flush mount speaker per system.

Equipment

- 4 NEC Multeos 40" LCD Screen
- 4 Monitor Mounting Brackets
- 4 PC with 2 Serial Ports
- 4 IPac Keyboard Emulators
- 16 Illuminated Push Buttons
- 1 Rane HC4 headphone Amplifier
- 4 Gorilla Handsets
- 2 Carlsboro Powerline CP200 Amplifiers
- 4 Kef Ci80 Speakers
- 1 Netgear Switch
- 2 Flight Case 16U Equipment Rack
- 2 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 2 Power Distribution per rack
- 2 Power Contactor per rack
- 2 AV Connection Panel

8.1 Conclusion

A single projector is provided with a native resolution of 1400 x 1050 and rated at 4200 ANSI lumens brightness. The projector front projects on a matt white wall of approximate dimensions 3 m x 2.25 m in a 4:3 format. The projector is fed with images to display from an exhibition PC that interprets the database information from the RFID game information and generate appropriate media to be displayed. The exhibition PC also is networked to four PC's each with a 20" LCD touch screen installed in the conclusion zone area. Each PC has a serial interface with an attached RFID reader where visitors can gain access to their results for the exhibition. There is also a speaker per screen.

An Alcorn McBride DVM player takes a 5.1 audio track and output it into a Denon Decoder. The line levels from the decoder go to the amps except for the left and right front feeds which will go into a mixer and then mix the left and right audio from the PC. It is possible locally via the amplifiers to change the volume level of any of the individual speakers.

The PC's, amplifiers and audio processor is installed in two local flight case 19" equipment racks. Also installed in this same rack is the a monitor, keyboard and tracker ball so that control of the exhibition can be undertaken from this point in addition to any remote web server facilities.

Equipment

- 1 Projector Mounting Bracket
- 1 Projection Design F1 Projector
- 1 Projection Design F1 Wide Angle Lens (1.02-1)
- 1 Denon DN-7100 Surround Sound Decoder
- 3 Carlsboro Powerline CP200 Amplifiers
- 1 Carlsboro Powerline CP800 Amplifier
- 5 JBL Control 23 Loudspeakers
- 1 JBL Control SB210 Sub bass
- 1 Alcorn McBride DVM 7400 E/B
- 1 Rane MLM 42S Mixer
- 1 Display PC with GeForce 8800 GTX Graphics card
- 1 Network PC
- 4 PC with 2 Serial Ports
- 4 Dell 2007FP" LCD Screens
- 4 20" U-Touch Screen Overlays
- 4 Dell Sound Bar Speakers
- 1 Keyboard and Tracker Ball
- 1 17" LCD Rack Monitor
- 1 24 Port Network Switch
- 1 Belkin Wireless Router
- 2 Flight Case 25U Equipment Rack
- 2 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5
- 2 Power Distribution per rack
- 2 Power Contactor per rack
- 2 AV Connection Panel

Ambient Audio Soundtrack

In each of the Global exhibits there is playing an ambient audio track from a pair of speakers. The audio is stored on a MP3 player.

Equipment

- 4 Electrosonic P900 MP3 Player
- 4 Carlsboro Powerline CP200 Amplifiers
- 8 JBL Control 23 Loudspeakers

Pivo Video Exhibit

A 6.5" LCD video screen displays in a loop from power on a MPEG 2 video file stored and replayed from an Alcorn McBride DVM player.

Equipment

- 1 Dicoll 6.5" LCD Video Chassis Display
- 1 Alcorn McBride DVM Player

The following spares are provided per exhibition: -

- 1 Projection Design F30 Projector (no lens)
- 4 Projection Design Projector Lamps
- 1 NEC Multeos 40" LCD Screen
- 1 Dell 2007FP 20" LCD Screen with touch screen overlay
- 1 Dell 3007WFP 30" LCD Screen with touch screen overlay
- 1 Alcorn McBride DVM2 Video Player
- 1 Lindy USB Extender
- 1 PC with 4 Serial Ports
- 1 Exhibition PC
- 1 PC with GeForce 8800GTX Graphics Card and 4 Serial Ports
- 1 Electrosonic P300 Mini Show Controller
- 1 Gorilla Handset
- 1 Carlsboro Powerline CP200 Amplifier
- 1 JBL Control 23 Loudspeakers
- 1 Carlsboro Powerline 800 Amplifier
- 1 Rane HC4 Headphone Amplifier
- 1 Denon DN-7000 Decoder
- 1 Kef Ci80 Speaker
- 1 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5

Operation

Power Up Procedures

It is good practise before starting up the AV system to ensure that all of the racks have power connected, this is shown by the neon above the supply connector being on and the neon next to the “circuit 1” control breaker. If the power is on then the racks will come on and off at the programmed time. Refer to Maintenance Section about changing these.

Should the system need to be turned on and off out of these hours, it can be done in one of two ways.

Rack by Rack

Each rack has its own power on and off button in the top panel next to the network switch window.

Global power control

In Rack 18, there is a “Global Power” pair of buttons that can switch the system on and off.

Note it is important that the Conclusion racks are powered up a few minutes before the other equipment as the RFID server needs to be connected before any of the exhibit PC's.

Power Down Procedures

The racks can be turned off in the opposite way to switching on by pressing the “off” button either locally or using the Global buttons.

It is important not to just switch off the power to the racks as this will prevent the projectors from shutting down and cause premature lamp failures. The power to the racks should not be turned off as memory in certain equipment needs to be maintained.

Maintenance

The system has been designed with maintenance in mind and the equipment where possible has been installed to make servicing and maintenance easy and risk free.

The system uses a lot of equipment that may not have been experienced by resident AV engineers, and we would recommend that specific training be carried out on these items. Electrosonic are happy to offer a service contract to suit the needs to maintain the high quality of the system.

Key tasks have been explained below, which will form the day-to-day maintenance of the exhibit.

We have made recommendations on suggested spares to be kept on site in case of failure, which Electrosonic will be happy to supply / replace any of the items at additional cost. We have tried to indicate the availability of spares but this is only a guide as suppliers stock levels can vary day by day.

24V and 12V PSUs have internal protection against overloading and short circuit.

Weekly Maintenance Schedule

- Test that all of the speakers are working.
- Test that all projections are working and are sufficiently bright.
- Check monitors are functioning and haven't suffered damage to the screens.
- Check functionality of all RFID sensors / push buttons distributed around exhibits.
- Check functionality and calibration of touch screens.

Monthly Maintenance Schedule

- Check alignment of all projection
- Clean air filters/vents to all projectors and video displays
- Clean air filters/vents to all servers and PCs in the equipment racks
- Clean and check amplifiers air inlets.
- Clean projection surfaces.

Fault finding and tip on specific equipment

Siemens Logo! PLC controllers

A programming cable has been left with the exhibition. Using the Logo! Soft comfort software also provided.

You can amend the clock settings and change the times they system comes on and off each day. Exact instructions can be found in the Siemens manual

The Power to the racks should be kept on as long as possible as after around 80 hours the Siemens controller loses its time settings.

Electrosonic Mini SCU's

The script write software has been provided and this can be run on a PC, then connect the Programming cable between serial port 1 and the com port of the PC. Follow the instructions in the supplied manual for specific tasks. This should not be needed for the day to day operation of this system.

Alcorn Mc Bride DVM7400 Media Players

The media and configuration for the Player is stored on the compact flash card located behind the removable front panel. In all cases in this exhibition, we are using the files to loop constantly and this means that the required file should be loaded onto the CF card with the title "VID00001.mpg".

PC remote desktop control

Anyplace control version 3.3 has been installed on each of the PC's - this will allow any PC on the network to remotely connect to any of the other PC's providing they have the Admin version of Anyplace control connected. A new connection can be setup by entering the IP address of the remote machine and using the passkey of "1101". Please use the IP address table to identify the IP address of the PC you wish to connect to. This can also be used to reset the power to switch a PC off or on remotely.

The Admin software has been installed on the Admin PC in Rack 17 (Conclusion area).

Recommended Tools

Below is a list of recommended tools required to maintain the system.

- Set of Metric Box Spanners / small socket set

- Set of metric open ended spanners

- Metric Allen key set

- Laptop with the following software installed

- Anyplace control

- Electrosonic Script write

- Electrosonic Bus mon 2k or similar serial software

- Network Scanning software such as SoftPerfect™ Network Scanner

Recommended Spares

Below is a list of spares we would recommend are kept on-site, in order that exhibit down times are kept to a minimum if maintenance/repair is required.

- 1 Projection Design F30 Projector (no lens)
- 4 Projection Design Projector Lamps (2 of each type)
- 1 NEC Multeos 40" LCD Screen
- 1 Dell 2007FP 20" LCD Screen with touch screen overlay
- 1 Dell 3007WFP 30" LCD Screen with touch screen overlay
- 1 Alcorn McBride DVM2 Video Player
- 1 Lindy USB Extender
- 1 PC with 4 Serial Ports
- 1 Exhibition PC
- 1 PC with GeForce 8800GTX Graphics Card and 4 Serial Ports
- 1 Electrosonic P300 Mini Show Controller
- 1 Gorilla Handset
- 1 Carlsboro Powerline CP200 Amplifier
- 1 JBL Control 23 Loudspeakers
- 1 Carlsboro Powerline 800 Amplifier
- 1 Rane HC4 Headphone Amplifier
- 1 Denon DN-7000 Decoder
- 1 Kef Ci80 Speaker
- 1 Siemens LOGO PLC System 6ED1 052-1CCOO-OBA5

Design Documentation

System Schematics

- Generic Wiring and Layouts
- Intro & Living surface
- Find Water or Die (Drinking Game)
- Global Exhibits
- Design your own Food
- Dinner Table
- Science beyond our basic needs
- Racing Game
- Design your own Vehicle
- Design your own Home
- Conclusion Interactives
- Conclusion Projection and central control

Other Design Information

- Network IP address and information
- AV Rack Positions and Venue cabling
- Rack and Flight cases
- Cable connection Standards

Equipment Manuals / Documentation

Video

Audio

Control

Source

CDs

Siemens Logo! Soft Comfort software

Electrosonic mini SCU Script Write

Anyplace control

Electrosonic Bus Mon 2k